



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,540	04/02/2004	Richard G. Lyons	1017.P093USC1	3215
7590	10/27/2005		EXAMINER	
Koestner Bertani, LLP P.O. Box 26780 Austin, TX 78755			COLILLA, DANIEL JAMES	
			ART UNIT	PAPER NUMBER
			2854	

DATE MAILED: 10/27/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/817,540

Applicant(s)

LYONS, RICHARD G.

Examiner

Daniel J. Colilla

Art Unit

2854

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1,4 and 8-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (6447847) in view of Takahashi et al. (JP 2000-238254) and Harlow (5645884).

Referring to claim 1, Hynes teaches a precision marking system to place reference markers on an object that comprises: a work surface (36) on which the object is placed, a multiple axis robot (20) , wherein positioning the multiple axis robot directed by a control system; and at least one end-effector (26) operable coupled to the multiple axis robot to place reference markers on the object, wherein the end-effector further comprises: a delivery system (See Column 4, lines 35-45) and a pick shaped stylus (See Column 2, line 63) coupled to a valve and wherein the picked shaped stylus has an internal orifice through which the ink is dispensed from the end-effector and onto the object (hole between 34 and needle; See Column 2, lines 59-62). Hynes does not teach an object locator system to determine the location and orientation of the object and features within the object relative to the work surface.

Takahashi et al. teaches an object locator system in a precision marking system to determine the location and orientation of the object as mentioned in paragraphs [0022], [0023] and [0028] of Takahashi . It would have been obvious to one having ordinary skill in the art at

Art Unit: 2854

the time the invention was made to modify the system of Hynes to include an object locator so that markings can be accurately applied on the object as taught by Takahashi et al.

Hynes teaches a delivery system but does not teach an ink delivery system. Hynes does not teach a pulsed valve to regulate the supply of ink from the ink delivery system. Harlow teaches an ink delivery system and a pulsed valve to regulate the supply of ink from the ink delivery system (See Column 2, lines 60-65). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes to include an ink delivery system and a pulsed valve to regulate the supply of ink from the ink delivery system in order to vary the amount of ink to be provided on the object as taught by Harlow. Referring to claim 4, Hynes teaches the precision marking system wherein the pick shaped stylus provide radial clearance around the orifice. (See Figure 7 and Column 2, lines 60-65).

Referring to claim 8, Hynes teaches a multiple axis robot but does not teach that the robot comprises a 6-axis gantry robot. Harlow teaches a 6-axis gantry robot (See Figure 8 or 9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the robot of Hynes to include a 6-axis gantry robot to provide a robot to move in multiple axis so that a uniform coating can be applied to an object as taught by Harlow.

Referring to claim 9, Hynes teaches the precision marking system with reference markers (See Column 1, lines 55-58). Hynes does not teach reference markers that provide alignment information for additional objects to be mechanically coupled to the object. Examiner notes that markings printed by Takahashi et al. are capable of being used as reference markers that provide alignment information for additional objects to be mechanically coupled to the object.

Referring to claim 10, Hynes teaches the precision marking system with reference

Art Unit: 2854

markers (See Column 1, lines 55-58). Hynes does not teach reference markers that provide part identification information. Examiner notes that the coating of Hynes can be used as reference markers that provide part identification information.

Referring to claim 11, Hynes teaches the precision marking system with reference markers (See Column 1, lines 55-58). Hynes does not teach that the reference markers provide assembly information to a user. Examiner notes that the coating of Hynes can be used as reference markers that provide assembly information to a user.

Referring to claim 12, Hynes teaches the precision marking system marking on an object (See Column 1, lines 11-12). Hynes does not teach that the object further comprises an aircraft understructure. Harlow teaches that the object can be an aircraft understructure (See Column 3, line 43). It would have been obvious to one having ordinary skill in the art at the time the invention was made to replace the object of Hynes with an aircraft understructure so that it can be marked as taught by Harlow.

Referring to claim 13, Hynes teaches the precision marking system wherein the end-effector is oriented to place reference markers on the surface of the object (See Column 1, lines 59-63).

Referring to claim 14, Hynes teaches an end-effector oriented to place reference markers (See Column 1, lines 59-63). Hynes is capable of being oriented to place reference markers on walls located at an angle to the surface of the object.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (6447847)

Art Unit: 2854

in view of Takahashi et al. (JP 2000-238254) and Harlow (5645884) and further in view of Bajoux et al (5160939).

Referring to claim 2, Hynes and Harlow teach all that is claimed as discussed above but they do not teach the precision marking system wherein the ink delivery system further comprises an ink reservoir operably coupled to a positive displacement pump. Bajoux et al teaches an ink delivery system further comprises an ink reservoir (48) operably coupled to a positive displacement pump (50). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes, Harlow and Takahashi et al. to include an ink reservoir operably coupled to a positive displacement pump to supply the ink head properly with ink as taught by Bajoux et al.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (6447847) in view of Harlow (5645884) and Takahashi et al. (JP 2000-238254) and further in view of Harenbrock (6499399).

Referring to claim 3, Hynes in view of Takahashi et al. Harlow teach all that is claimed as discussed above. They do not teach the precision marking system of Claim 1, wherein the ink delivery system further comprises a positive pressure pneumatic reservoir delivery system. Harenbrock teaches an ink delivery system that further comprises a positive pressure pneumatic reservoir delivery system (See Column 3, lines 7-8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes, Takahashi et al. and Harlow to include a positive pressure pneumatic reservoir delivery system to provide amounts of ink to the system using a gaseous medium as taught by Harenbrock.

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (6447847) in view of Harlow (5645884) and Takahashi et al. (JP 2000-238254) and further in view of Bevirt et al (6739448).

Referring to claim 5, Hynes in view of Takahashi et al. Harlow teach all that is claimed as discussed above. They do not teach the precision marking system wherein the work surface comprises a shuttle table. Bevirt teaches a work surface which comprises a shuttle table (28). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes, Takahashi et al. and Harlow to include a shuttle table support and transport large objects as taught by Bevirt.

Referring to claim 6, Hynes, Takahashi et al. and Harlow teach all that is claimed as discussed above. They do not teach the precision marking system wherein the shuttle table further comprises a series of vacuum support pins predetermined arrangement for a given object. Bevirt teaches a series of vacuum support pins (52) predetermined arrangement for a given object. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Hynes, Takahashi et al. and Harlow to include vacuum support pins to help in supporting the object on the table as taught by Bevirt.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (6447847) in view of Harlow (5645884) and Takahashi et al. (JP 2000-238254) and further in view of Pryor (6301763).

Referring to claim 7, Hynes in view of Takahashi et al. and Harlow teach all that is claimed as discussed above. They do not teach the precision marking system wherein the object locator system further comprises a vision end-effector to locate the object within a work envelope. Pryor teaches an object locator system further comprising a vision end-effector to locate the object within a work envelope. (Figure 3A, 313). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the locator system of Hynes, Takahashi et al. and Harlow to include a vision end-effector to help to locate the object with a camera and monitor for better accuracy of locating the object and specific points on the object.

7. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (6447847) in view of Harlow (5645884) and Takahashi et al. (JP 2000-238254) and further in view of Terada (5572103).

Referring to claim 15, Hynes in view of Takahashi et al. and Harlow teaches all that is claimed as discussed above. They do not teach the precision marking system further comprising a calibration system operable to calibrate each end-effector when selected. Terada teaches a system further comprising a calibration system operable to calibrate each end-effector when selected. (See Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the locator system of Hynes, Takahashi et al. and Harlow to include a calibration system so that the effector can have minimal errors due to the position of the robot.

Art Unit: 2854

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hynes (6447847) in view of Harlow (5645884) and Takahashi et al. (JP 2000-238254) in further view of Gokey (5386762).

Referring to claim 16, Hynes in view of Takahashi et al. and Harlow teach all that is claimed as discussed above. They do not teach the precision marking system wherein the end-effector is stored within a storage rack when not operable coupled to the multiple axis robot. Gokey teaches that an end-effector is stored within a storage rack when not operable coupled to the multiple axis robot (See Column 5, lines 11-20). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the locator system of Hynes, Takahashi et al. and Harlow such that an end-effector is stored within a storage rack when not operable coupled to the multiple axis robot so that the robot can retrieve the proper effector when desired as taught by Gokey.

9. Claims 17 and 20-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow (5645884) in view of Hynes (6447847).

Referring to claim 17, Harlow teaches An end-effector to place reference markers on an object that comprises: a fluid delivery system (92), a pulsed valve to regulate the supply of fluids from the fluid delivery system (See Column 2, lines 60-65), and a stylus (Fig 11) operably coupled to the pulsed valve to receive fluids from the pulsed valve, and wherein the pick shaped stylus has an internal orifice (154) through which the fluids are dispensed from the end-effector and onto the object. See Figure 11). Harlow does not teach that that stylus is pick shaped. Hynes teaches a pick shaped stylus (See Column 2, line 63). It would have been obvious to one having

Art Unit: 2854

ordinary skill in the art at the time the invention was made to modify the stylus of Harlow such that it is pick shaped so that it can mark in more detail as taught by Hynes.

Referring to claim 20, Harlow teaches the end-effector wherein the stylus provide radial clearance around the orifice. (See Figure 11).

Referring to claim 21, Harlow teaches the end-effector wherein the end-effector is operably coupled to a multi axis robot within a precision marking system. (See Figure 9).

Referring to claim 23, Harlow teaches the end-effector wherein the fluids further comprise inks, paints, epoxy, or adhesives. (See Column 8, line 48).

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow (5645884) in view of Hynes (6447847) and further in view of Bajoux et al (5160939).

Referring to claim 18, Harlow and Hynes teach all that is claimed as discussed above but they do not teach the precision marking system wherein the ink delivery system further comprises an ink reservoir operably coupled to a positive displacement pump. Bajoux teaches an ink delivery system further comprises an ink reservoir (48) operably coupled to a positive displacement pump (50). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes and Harlow to include an ink reservoir operably coupled to a positive displacement pump to supply the ink head properly with ink as taught by Bajoux.

11. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow (5645884) in view of Hynes (6447847) and further in view of Harenbrock (6499399).

Art Unit: 2854

Referring to claim 3, Hynes and Harlow teach all that is claimed as discussed above. They do not teach the precision marking system of Claim 17, wherein the ink delivery system further comprises a positive pressure pneumatic reservoir delivery system. Harenbrock teaches an ink delivery system that further comprises a positive pressure pneumatic reservoir delivery system (See Column 3, lines 7-8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes and Harlow to include a positive pressure pneumatic reservoir delivery system to provide amounts of ink to the system using a gaseous medium as taught by Harenbrock.

12. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harlow (5645884) in view of Hynes (6447847) and further in view of Takahashi et al. (JP 2000-238254).

Harlow in view of Hynes discloses the claimed end-effector except for the object locator system. However, Takahashi et al. teaches an object locator system to determine the location and orientation of the object as mentioned in paragraphs [0022], [0023] and [0028] of Takahashi . It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Hynes and Harlow to include an object locator so that markings can be accurately applied on the object as taught by Takahashi et al.

Response to Arguments

13. Applicant's arguments filed 7/27/05 have been fully considered but they are not persuasive of any error in the above rejection.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the motivation to combine is found in the knowledge generally available to one of ordinary skill in the art.

Applicant argues that “at no point does Hynes teach that the end-effector may be used to place reference markers on the object.” It is noted that this language, to which applicant is referring, is a “for use” type statement and does not positively recite any structure in the claim. The references need not disclose the functions found in “for use” type statements. However, it does appear that the device disclosed by Hynes would be capable of placing reference markers on an object.

Applicant further argues that Hynes does not teach that “the shaped stylus may be shaped like a shaped dental pick or instrument.” It is noted that applicant does not use the term “dental pick or instrument” in the actual claim language. Instead applicant uses the broader term, “pick shaped stylus.” The examiner believes that needle valve 34 (as shown in Figure 6 of Hynes) can be considered pick shaped because it is in the general shape of other types of picks such as a toothpick.

Art Unit: 2854

With respect to applicant's arguments regarding the object locator system and precision marking system, the patent to Takahashi et al. has been added to the rejection to provide support for rejecting these claim recitations.

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Shimizu, Sakurada and Sugiyama are cited to show other examples of precision marking systems with at least one end-effector.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Colilla whose telephone number is 571-272-2157. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on 571-272-2168. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 25, 2005



Daniel J. Colilla
Primary Examiner
Art Unit 2854